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The geological - Geophysical studies in petroleum geology for the efficiency increase of horizontal drilling

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Abstract

The study of physical - geological heterogeneities of geologic environments based on gravity and well logging surveys allow get the detailed characteristics of their structure and effectively solves the problems of petroleum geology. These data increase the effectiveness of hydrocarbon deposits detection in the Ural - Volga region and optimizes the horizontal wells direction. The successful results of the identification of thinning areas over the oil fields. These areas are effectively identified by high-precision gravity and characterized by the acceleration of the drilling process. Identification of high porosity areas in carbonate rocks, allocated by HGL and GR logs, which may be related to non-structural oil fields and be the targets for horizontal wells. Results of high-precision gravity measurements and interpretation of gravity anomalies allow detection of the sand lenses containing natural bitumen in the Permian strata. During the hydrocarbons extraction it is advised to carry out high-precision gravimetric measurements in monitoring mode, which will optimize horizontal drilling and increase its effectiveness. In solving these problems the authors methods of gravity anomalies interpretation are implemented. The geological reliability of decisions is confirmed by the well logs and laboratory data.

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